

### **REMARKS**

Entry of this amendment is proper under 37 CFR §1.116, since there are no new claims or issues requiring additional search by the Examiner, and the only claim amendments are Applicant's attempt to expedite prosecution in anticipation of a new statutory subject matter rejection by the Examiner based on the recent *Bilski* holding, and to add patentable weight the body of the independent claims for the "moving objects" description of the preamble, as requested by the Examiner on page 13 of the Office Action.

Claims 1-25 are all of the claims presently pending in the application.

It is noted that Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 1-16 and 25 stand rejected under 35 USC §102(b) as allegedly anticipated by US Patent 5,963,956 to Smartt. Claims 17-20, 22, and 23 stand rejected under 35 USC §102(e) as allegedly anticipated by US Patent 7,010,522 to Jagadish et al. Claim 21 stands rejected under 35 USC §103(a) as allegedly unpatentable over Jagadish, further in view of Smartt. Claim 24 stands rejected under 35 USC §103(a) as allegedly unpatentable over Smartt.

The prior art rejections are respectfully traversed in view of the following discussion.

#### **I. THE CLAIMED INVENTION**

Applicant's invention, as disclosed and claimed in independent claim 1, is directed to a method of monitoring continual queries over moving objects. A query region is identified in a digital format. The query region is strictly covered by at least one shingle, so that the query region is completely covered by the at least one shingle and no section of any of the at least one shingle falls outside the query region.

The conventional methods described beginning at line 1 of page 3 of the specification have various problems, including, as described at lines 1-6 of page 5, it is not known whether an object inside a cell is within the boundaries of a query stored in a partial list of that cell.

In contrast, the present invention provides a method by which a query region is strictly covered by one or more shingles, although the shingles are permitted to overlap.

## II. THE PRIOR ART REJECTIONS

The Examiner alleges that Smartt anticipates the invention described by claims 1-16 and 25 and renders obvious claim 24. The Examiner also alleges that Jagadish anticipates claims 17-20, 22, and 23, and, when modified by Smartt, renders obvious claim 21.

Applicants respectfully disagree and respectfully submit that the rejection of record fails to establish a *prima facie* rejection, since, as the Examiner seemingly agrees, on pages 12, 13, and 15 of the Office Action mailed on October 6, 2008, once the independent claims are amended to provide patentable weight in the body of the claims to monitoring of moving objects, the claimed invention will clearly distinguish from either Smartt or Jagadish.

### The Rejections Based on Smartt

In contrast to the present invention, the method of Smartt creates tiered tiles such that tiles at different tiers might overlap each other. This tiered-tile structure is used to provide a coordinate system for organizing spatial objects, such as line segments or polygons. Smartt coincidentally refers to these overlapping tiles as “shingles.” However, the goal in Smartt is to place a spatial object, such as a line segment or a polygon, completely within a single tile, avoiding splitting a spatial object between multiple tiles. Hence, a key difference from the present invention is that a spatial object in Smartt can only be inside a single tile (shingle).

There are other differences between the present invention and Smartt. A key purpose of the present invention is to build a query index of the query regions so that the monitoring of moving objects can be processed efficiently. On the other hand, the goal in Smartt is to efficiently organize a large quantity of spatial objects, such as line segments and polygons. Smartt builds an index of these spatial objects, using the tiered-tile structure as a coordinate system, so that spatial queries can be answered efficiently. The method of Smartt does not satisfy the plain meaning of even the independent claims.

That is, the method of Smartt is not concerned with moving objects and does not demonstrate a query as being completely covered by one or more (possibly overlapping) shingles. Relative to the limitations of independent claim 1, the Examiner points to lines 17-24 and 63-67 of column 13. However, these lines are only related to stationary objects within

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the database and are not reasonably related to construction of a query.

Indeed, the description at lines 33-37 of column 21 clearly demonstrate that a query in the method of Smartt is not constructed of shingles. Rather, for a query evaluation, the shingles of the underlying database are identified, an entirely different concept from that of the present invention.

Claim 3 more particularly relates to the moving objects within the claim limitation itself. The descriptions at the locations in Smartt to which the Examiner point have nothing to do with moving objects.

Hence, turning to the clear language of the claims, in Smartt there is no teaching or suggestion of: "A method of monitoring continual queries over moving objects, said method comprising: retrieving, from a memory of a computer, a query region representing a continual query over which movements of moving objects are to be monitored, said query region being represented in a digital format; and strictly covering, using a processor of said computer, said query region by at least one shingle, so that said query region is completely covered by said at least one shingle and no section of any said at least one shingle falls outside said query region", as required by independent claim 1. Independent claim 25 has similar language.

Therefore, claims 1-16, 24, and 25 are clearly patentable over Smartt.

#### The Rejections Based on Jagadish

The Examiner also alleges that Jagadish anticipates the present invention described by claims 17-20, 22, and 23, and, when modified by Smartt, renders obvious claim 21.

Again, Applicants respectfully disagree.

Jagadish discloses a method for decomposing a string in a database into overlapping "positional q-grams", sequences of predetermined length q, and containing information regarding the "position" of each q-gram within the string. An index is then formed of the tuples of the positional q-gram data.

Applicants respectfully bring to the Examiner's attention that a "string" or "substring" in a database is likewise totally different from either a query region or moving objects, and Jagadish is not, therefore, even relevant to the claimed invention.

Therefore, claims 17-23 are clearly patentable over Jagadish.

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### III. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 1-25, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Assignee's Deposit Account No. 50-0510.

Respectfully Submitted,



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